AT A GLANCE:
NIH's Center for Information Technology

OVERVIEW

The Center for Information Technology (CIT), one of the 27 institutes and centers (ICs) at the National Institutes of Health (NIH), focuses on delivering high-quality IT services and systems to enable NIH staff to perform world-class research. Each day, approximately 45,000 NIH staff in 400+ buildings and facilities across the Washington, DC and Maryland metropolitan areas, Arizona, Montana, and North Carolina rely on CIT-managed IT services and infrastructure.

WHAT CIT OFFERS NIH

As a service organization, CIT provides the NIH community with a variety of IT services to support mission-critical research and administration. CIT does not receive a direct appropriation from Congress, so these services are supported by funds from the 26 other NIH ICs and the Office of the Director. For some of CIT's services, use varies by NIH IC. Other services are ubiquitous throughout the NIH campus.

CIT's intramural research program (IRP), which includes staff scientists and researchers, provides collaborative support to the NIH intramural community in the areas of computational bioscience, engineering, informatics, and statistics.

RECENT IMPROVEMENTS AND INNOVATIONS

NIH has benefitted from a number of CIT-managed programs and critically needed IT infrastructure upgrades. The most recent key advancements include the following:

- **The STRIDES Initiative.** The Science and Technology Research Infrastructure for Discovery, Experimentation, and Sustainability (STRIDES) Initiative provides a cost-effective way for biomedical researchers at NIH and NIH-funded institutions to access rich datasets and advanced computational infrastructure, tools, and services offered by partnering organizations including Google Cloud and Amazon Web Services. The overall goal of the initiative is to accelerate biomedical advances by reducing economic, technological, and administrative barriers to data and resources. A central tenet of the STRIDES Initiative is that data made available through these partnerships will incorporate standards endorsed by the biomedical research community to make data findable, accessible, interoperable, and reusable (FAIR), while employing appropriate safeguards for controlled access.

- **A state-of-the-art network that connects researchers around the world.** NIH's network now includes a new 100Gb core and a new 100Gb connection to the Internet2 (the U.S. research and education network), and almost 100 campus labs and facilities have been upgraded from mostly 1Gb connectivity to 100Gb, 40Gb, or 10Gb network speeds. Network traffic continues to grow, and the new network is currently pushing 3.6 petabytes of data a day. A new "Science DMZ" enables high-performance applications to run on a network distinct from the general-purpose network, with added layers of security. NIH scientists and external collaborators can transfer large amounts of data at faster rates to conduct their research in unprecedented ways.

- **Expansion of NIH's Biowulf cluster.** After undergoing a multi-year expansion, NIH's Biowulf cluster now serves as a modernized, shared use, scientific computing core facility for NIH IRP investigators. These improvements earned Biowulf a top 500 ranking on the TOP500 list of the most powerful commercially available computer systems in the world. As of June 2019, the Biowulf cluster had over 99,000 processor cores that allow for large numbers of simultaneous jobs and large-scale distributed memory tasks, such as molecular dynamics. Biowulf has been extraordinarily

successful and has been cited in more than 2,500 published papers since 1999. NIH's modernized high-performance computing (HPC) capabilities are enabling innovations in scientific research in several areas, most notably genomics, computational chemistry, and most recently, cryo-electron microscopy imaging.

- **Promoting staff collaboration and productivity.** NIH has also undergone a multi-year modernization effort to implement state-of-the-art collaboration capabilities such as virtual meetings, desktop videoconferencing, and video streaming. In addition, NIH is implementing cloud-based email services, office productivity tools, file storage, and collaboration capabilities using Microsoft's Office 365 cloud platform. This not only results in reduced time and travel expenses, but also allows NIH staff to work more efficiently anytime, anywhere.

CIT ORGANIZATION AND STRUCTURE

The CIT workforce consists of federal staff with support from industry that includes a diverse group of IT specialists, engineers, and technicians. CIT is made up of the following service areas and offices:

Office of the Director: Directs and evaluates the Center's programs, policies, and procedures.

- *Office of IT Services Management:* Manages NIH's complex infrastructure and provides a variety of IT services to maximize agility and promote responsiveness in support of NIH IT.

    Service areas include the following:

    Network Services: Provides a high-speed, robust computer network for the NIH community that connects facilities both on and off campus to each other, to the Internet, and to Internet2.

    High Performance Computing Services (HPC): Manages and supports NIH's HPC Core Facility and its resources (otherwise known as Biowulf).

    Unified Communication and Collaboration Services: Manages and delivers integrated voice, video, and messaging for NIH.

    Business Applications Services: Develops and operates enterprise business systems and IC-specific applications and tools.

    Facility and Infrastructure Services: Provides and maintains the infrastructure and cabling services that

support data, voice, and video and cellular connectivity across NIH.

Hosting and Storage Services: Provides Windows, Solaris, Linux, and web hosting and data storage options to NIH ICs via on-campus and nearby data centers.

Identity and Access Management Services: Maintains the policy and infrastructure required to provide secure access to NIH networks, computers, applications, files, websites, and other IT resources.

IT Support Services: Provides a full scope of day-to-day IT services, spanning desktop, conferencing, mobile devices, and others for specific ICs and programs.

Operations Management Services: Directs and supports CIT's daily IT service management functions, including overseeing the Technology Operations Center—a state-of-the-art facility that allows NIH to monitor critical IT services and ensures rapid incident response for the NIH community.

Service Desk Services: Manages the NIH Call Center and provides IT support for all NIH ICs, including VPN account management and troubleshooting and support for email, wireless, mobile devices, and enterprise applications.

Cloud Services: Provides oversight and direction for the NIH STRIDES Initiative, which seeks to increase access to research data and computational infrastructure, tools, and services.

- *Office of Intramural Research:* Provides scientific and technical expertise to NIH's IRP by developing and delivering computational methods and tools to solve complex biomedical laboratory and clinical research problems.

- *Office of Administrative Management:* Provides support in the areas of finance, human resources, contracts, acquisition, procurement, communication, and administration.

LEARN MORE

To learn more about CIT, visit our website at https://www.cit.nih.gov or email CITCommunicationsandOutreach@mail.nih.gov